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TITLE: OPTICAL FIBER LASER EQUIPMENT

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ABSTRACT:

PURPOSE: To obtain an optical fiber laser device which realizes constantly stable laser operation even with ambient temperature fluctuating and is efficient especially for mode lock operation by a method wherein effective resonance length of optical fiber laser is specified so that it satisfies a specific equation.

CONSTITUTION: In an optical fiber laser device consisting of a resonator system equipped with a laser oscillation medium made of a single mode

optical
fiber core 1 with rare earth elements added and resonating mirrors 2a, 2b which
generate laser resonance, an optical modulator 21 inserted in this resonator
system and a light source 3 for exciting rare earth elements of said oscillation medium 1, effective resonance length L(T) oh said optical fiber
laser is determined so that it satisfies a constant equation,
N(T)×L(T),
where N(T) refers to a group refractive index of said optical fiber 1, and N(T)
and L(T) refer to functions of absolute temperature indication T of operating
temperature of said laser device. This maintains optical path length constant
even if ambient temperature fluctuates, thus permitting stable laser operation.